

Claims

1. A method for controlling at least one radio bearer parameter of a first radio bearer to be established or maintained between a mobile terminal and a first access-network node in a first cell of a cellular radio access network, said method comprising:

determining a current value of at least one load parameter indicative of an air interface load of the first cell;

determining a current first target or limit value of at least one radio access bearer parameter of a radio access bearer; and

selecting a second target value or a limit value of the radio bearer parameter based upon the first target or limit value and the current value of the load parameter,

wherein the first access-network node communicates with a core-network node in a core network to establish or maintain at least one radio access bearer between the mobile terminal and the core-network node.

2. The method as recited in claim 1, wherein determining the current value of the load parameter comprises measuring the current value.

3. The method as recited in claim 1, wherein selecting the target or limit value for the radio bearer parameter is performed based upon at least one parameter of the radio bearer belonging to a parameter group, the parameter group including at least one of a service class requested for the radio bearer, a priority allocated to the mobile terminal, and a transmission power level used to establish or maintain the radio bearer.

4. The method as recited in claim 3, wherein the service class of the parameter group provides real-time or non-real time communication between the mobile terminal and the core-network node.

5. The method as recited in claim 4, wherein the service class is further divided into two or more service subclasses, based upon a maximum allowable delay.

6. The method as recited in claim 1, wherein selecting the second target value or limit value comprises evaluating a mapping function, with the mapping function allocating at least one set of radio bearer parameter values to a given set of radio access bearer parameter values.

7. The method of claim 6, wherein the selecting step comprises selecting a set of predefined default radio bearer parameter values related to the first cell when the radio bearer is to be established, and a plurality of sets of radio bearer parameter values being allocated to the current radio access bearer parameter values.

8. The method as recited in claim 7, wherein evaluating the mapping function comprises determining all sets of radio bearer parameters allocated to the radio access bearer parameter values.

9. The method as recited in claim 1, further comprising determining at least one measured value of at least one radio bearer parameter of the established radio bearer.

10. The method of claim 9, wherein said at least one radio bearer parameter is indicative of a signal-to-interference ratio of said radio bearer.

11. The method of claim 9, wherein said at least one radio bearer parameter is indicative of an average bit rate transported through said radio bearer and scheduled by a Packet Scheduler.

12. The method of claim 9, comprising a step of storing a measured performance parameter value and the pertaining radio bearer parameter values.

13. The method of claim 9, wherein said selecting step comprises:
evaluating a cost function allocating to a given value of said radio bearer parameter a cost value indicative of a cell capacity loss; and
selecting the radio bearer parameter value for which the cost function has a minimum.

14. The method of claim 13, further comprising
establishing a second radio bearer with radio bearer parameters optimizing said cost function; and
switching from said first radio bearer to said second radio bearer.

15. The method of claim 7, comprising replacing said default radio bearer parameter values with a statistical average of radio bearer parameters optimizing the cost function.

16. The method of claim 1, wherein determining the current first target of limit value of at least one radio access bearer parameter comprises determining a value of at least one of the group of a maximum bit rate, a guaranteed bit rate, a

residual Bit Error Ratio (BER), a transfer delay, a frame error rate, a maximum Service Data Unit (SDU) size, and a SDU error ratio.

17. The method of claim 1, wherein said radio bearer parameter is at least one of the group of an interleaving length, a target frame erasure rate and a target block error rate, and a radio link control configuration.

18. The method of claim 1, further comprising repeating the steps for each established radio bearer.

19. The method of claim 1, further comprising a step of handing over said established radio bearer from said access network node to a second access network node in a second cell of said radio access network, wherein said second cell takes over a role of said first cell, and wherein said second access network node takes over a role of said first access network node.

20. The method of claim 1, wherein said radio bearer provides downlink services.

21. The method of claim 1, wherein said radio bearer provides at least one of uplink services and downlink services.

22. A Radio Bearer Control unit for controlling at least one radio bearer parameter, said unit comprising:

- a Parameter Retrieval unit configured to communicate with an external admission control unit for ascertaining a current first target or limit value of at least one radio access bearer parameter;

- a Performance Data Retrieval unit adapted to communicate with an external radio network monitoring statistics unit for receiving at least one current measured value of at least one air interface load parameter; and

- a Radio Bearer Parameter Control unit communicating with said parameter retrieval unit and said performance data retrieval unit, and configured to select a second target or limit value of a radio bearer parameter based upon the first target or limit value and said current value of said at least one air interface load parameter.

23. An admission control unit, comprising a Radio Bearer Control unit according to claim 22.

24. A radio network controller, comprising a Radio Bearer Control unit according to claim 22.

25. A system for controlling at least one radio bearer parameter of a first radio bearer to be established or maintained between a mobile terminal and a first access-network node in a first cell of a cellular radio access network, said system comprising:

first determining means for determining a current value of at least one load parameter indicative of an air interface load of a first cell;

second determining means for determining a current first target or limit value of at least one radio access bearer parameter of a radio access bearer; and

selecting means for selecting a second target value or limit value of the radio bearer parameter based upon the first target or limit value and the current value of the load parameter,

wherein the first access-network node communicates with a core-network node in a core network to establish or maintain the at least one radio access bearer between the mobile terminal and the core-network node.

26. A radio bearer control unit for controlling at least one radio bearer parameter, said radio bearer control unit comprising:

parameter retrieval means for communicating with an external admission control unit for ascertaining a current first target or limit value of at least one radio access bearer parameter;

performance data retrieval means for communicating with an external radio network monitoring statistics unit for receiving at least one current measured value of at least one air interface load parameter; and

radio bearer parameter control means communicating with said parameter retrieval means and said performance data retrieval means, for selecting a second target or limit value of a radio bearer parameter based upon the first target or limit value and the current value of the at least one air interface load parameter.